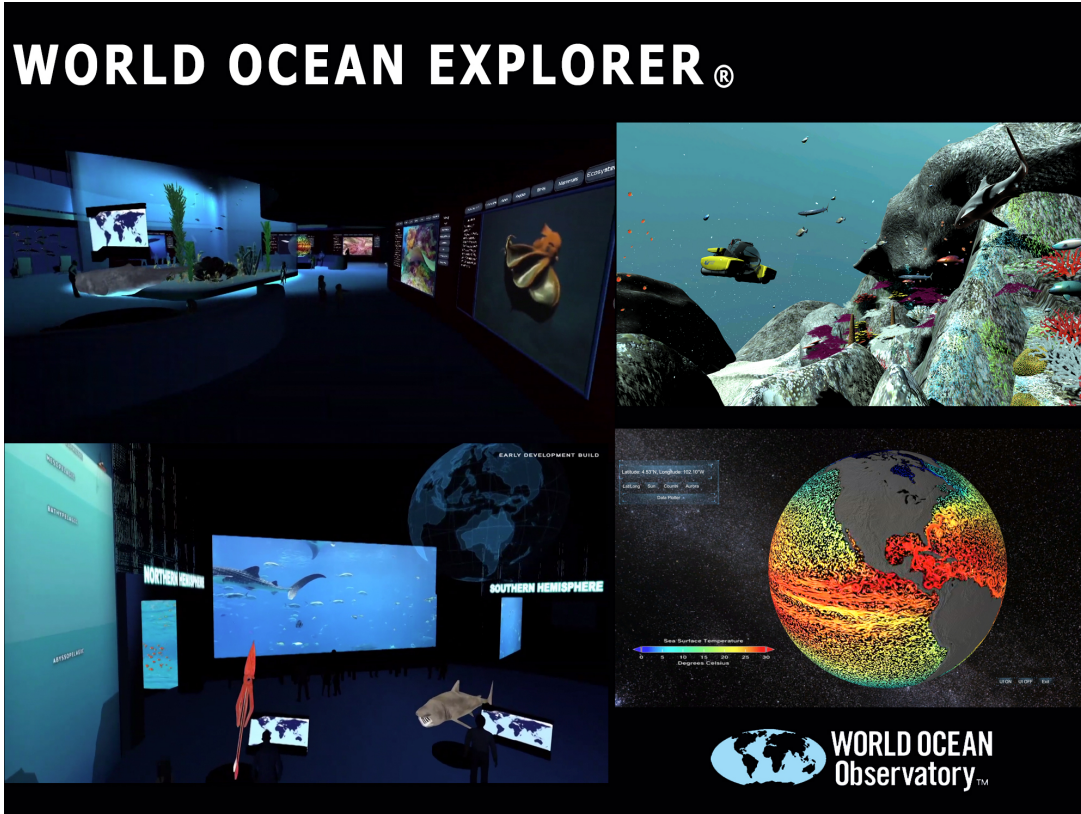


WORLD OCEAN EXPLORER

AN EDUCATIONAL, INTERACTIVE GAME OF
OCEAN EXPLORATION AND DISCOVERY
DESIGNED FOR STUDENTS AGES 10 AND UP



WORLD OCEAN EXPLORER IS:

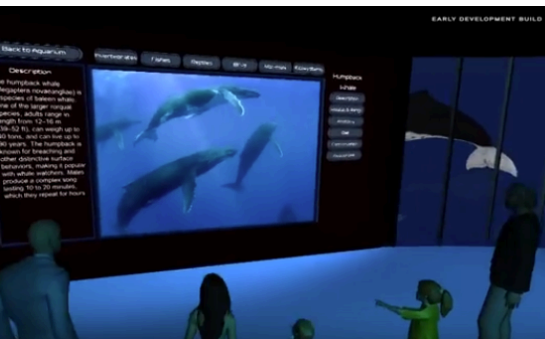
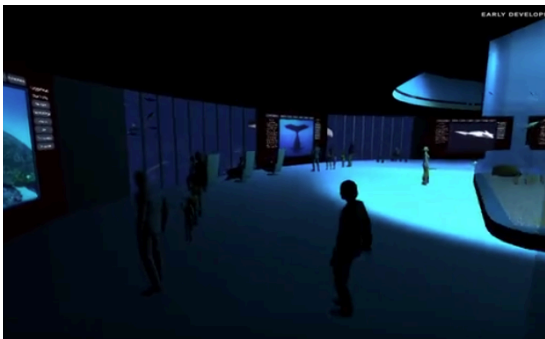
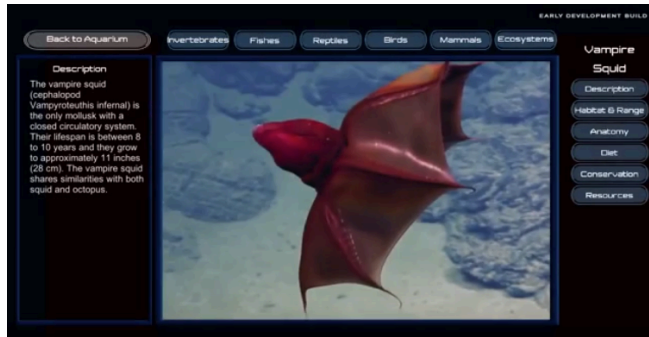
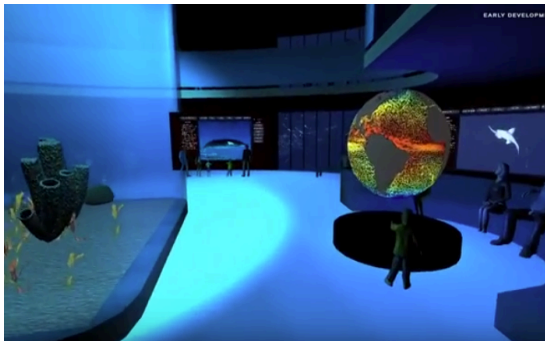
- a cutting edge virtual aquarium gaming concept designed to increase ocean literacy, an interest in ocean fields of study and to excite students about scientific ocean exploration
- an educational gaming experience, free for use in the classroom and at home by ocean enthusiasts ages 10 and up
- inspired by the Next Gen Science Standards and the Ocean Literacy Curriculum
- an immersive gaming experience designed to excite students about scientific ocean exploration Users will be able to engage with the
- a virtual marine environment with interactive displays
- free for students and educators anywhere around the world
- unique in the world today
- relevant in a post-Covid19 world when aquariums are out of reach

The WORLD OCEAN EXPLORER platform is comprised of three major components. Each is designed to encourage open discussion toward solving problems and promoting better understanding of ocean systems and health.

1. AQUARIUM ENVIRONMENT / SPECIES TANKS

See *budget appendix i*

Explorer is a virtual gaming experience based on realistic aquarium design. Visitors will be able to engage with the marine environment and educational services including a visualization theater, interactive displays, and learn about species and habitat in both the northern and southern hemispheres that are not otherwise available for display in an aquarium setting.

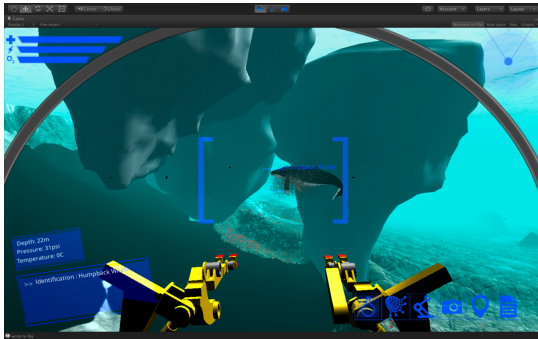


Users can explore the thoughtfully imagined and rendered virtual aquarium environment using their computer keyboard and mouse, approaching and interacting with searchable species tanks where one can choose to learn about marine mammals, reptiles, sea birds, invertebrates, and more. The database contains 3d models; information and diagrams related to anatomy, habitat, range, migration, diet, and more; links through to the Ocean Literacy curriculum, teaching modules, educational resources, and lesson plans as outlined in the framework for K-12 education as aligned by the Next Gen Science Standards (NGSS).

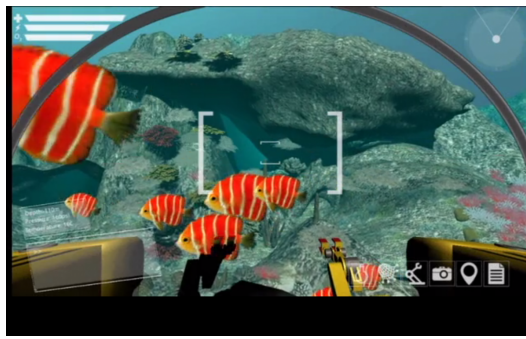
2. MANNED SUBMERSIBLE

See budget appendix ii

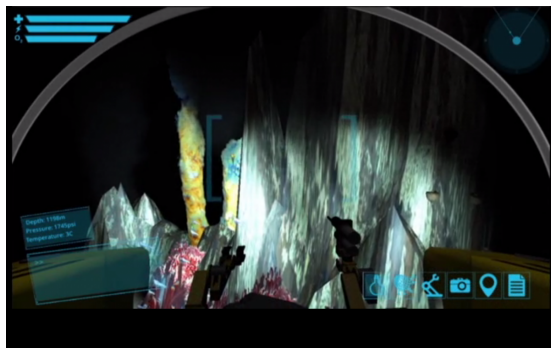
Users can board a submersible and set out on a free play or mission-driven exploratory journey in a variety of locales: a polar sea, a tropical reef, a deep sea hydrothermal vent, an old shipwreck, and a recent contamination event where students can conduct an environmental assessment and develop a planned response. Each environment will be populated with searchable plant and animal species, a wide range of geological and mineralogical features, with expansive and complex terrain for exploration and learning. Environments explored from within the submersible reflect real-world physical and chemical properties of the ocean such as pressure, temperature and salinity. The submersible is equipped with an array of instrumentation available to the pilot, allowing for physical, chemical, biological and geological investigation. Data collected can be stored and exported into the classroom for qualitative and quantitative use. Multi-level activities range from open discussion, problem solving and solution strategy development, data interpretation and report writing.



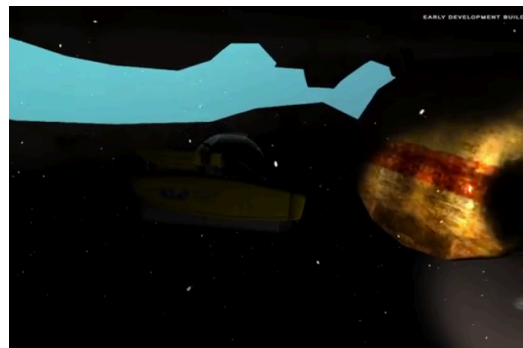
POLAR SEA



A TROPICAL CORAL REEF



A HYDROTHERMAL VENT



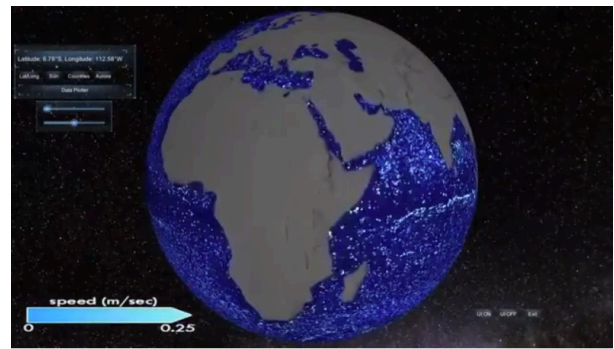
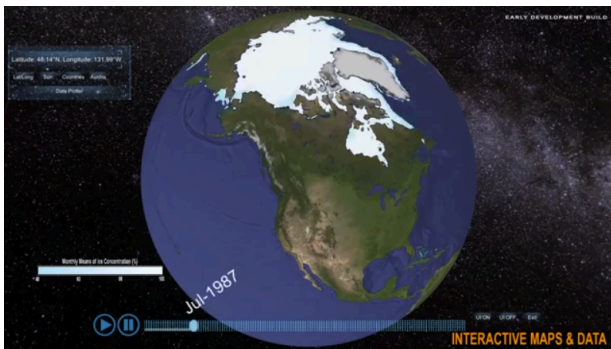
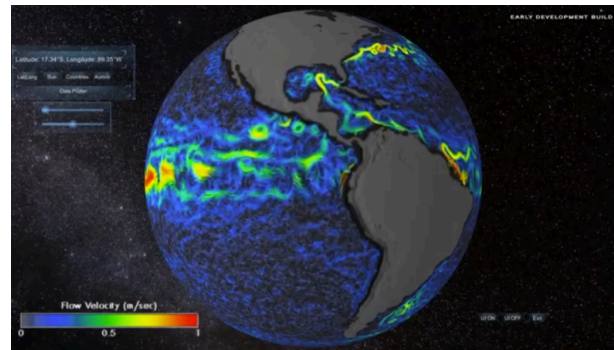
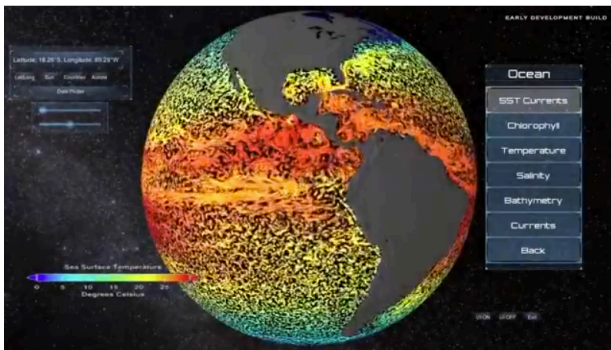
A CONTAMINATION EVENT WITH ASSESSMENT OF ECOSYSTEM HEALTH

Submersible locales include the deep sea of the Marianas Trench; a tropical coral reef in the Caribbean; the dense, cold waters of the Polar region; a contamination event on the seafloor; and a Spanish galleon shipwreck at rest on the edge of an abyss. The submersible will excite students about the infinite possibilities associated with ocean exploration: from learning about marine species and biodiversity in various ocean ecosystems to gaining an understanding of what it means to gather scientific data, to making discoveries, carrying out investigations, and analyzing findings. Users will be able to select an avatar and choose between mission or free-play exploration scenarios and dive to ocean depths rarely explored by manned submersible.

3. EARTH OCEAN ANALYZER

See budget appendix iii

Earth Ocean Analyzer (EOA) is an interactive mapping tool designed to give the user an informative experience to emphasize the global impact of earth-climate systems. EOA's interactive mapping tools provide introductory data visualizations suitable for a broad range of audiences. Users can access introductory geospatial data sets, view animations and simulations, create map overlays, and plot data as a means to visualize the dynamic natural world and to view the historical and future impacts of sea level rise, changing global temperature and ocean currents, flood frequency in coastal areas, migration of plastics, and much more.



Missions and activities will appeal to a wide range of age groups: from simple species identification and ocean landscape exploration for younger middle school students to more complex data collection and analysis (such as water sampling or hydrothermal vent data collection) for high school students. We know that educators are challenged to find high quality content, and many National Marine Educators we met in 2019 say there are not enough online learning resources and educational gaming experiences for their students. The "games for good" movement has inspired us to build upon activity-based experiences to build awareness and understanding. There is a need in the educational realm for teaching tools that are free; that match educational standards such as common core and NGSS; that teachers are comfortable using and facilitating; and that are flexible and innovative. Visit worldoceanobservatory.org/world-ocean-explorer to read more about the ongoing development of World Ocean Explorer.

FACTS AND RATIONALE

Since covid-19 shuttered schools earlier this year, many educators that have risen to the challenge of transitioning to digital learning, while still integrating environmental activities and experiences into the curriculum. Designed for remote learning, EXPLORER can be used by any student with a computer, anywhere in the world.

The W2O is committed to expanding opportunities for climate and environmental education around the world in order to develop Citizens of the Ocean that are ready, willing and educated to take action for a more equitable and sustainable future for us all.

In June of 2020 the Lawrence Hall of Science at UC Berkeley published a policy brief entitled “A Field at Risk: The Impact of Covid-19 on Environmental and Outdoor Science Education” which outlines the importance of continued education in exploratory fields of study. If conventional outdoor education is curtailed, even postponed, a virtual program such as the WORLD OCEAN EXPLORER could creatively fill the gap—not as a substitute, but as another tool to build secondary school-level understanding of the ocean world.

Through this online experience, users can tour through a virtual aquarium, learn about species and habitat rarely seen; and connect with content related to the Next Generation Science Standards and the Ocean Literacy Curriculum; explore deep sea ocean locales aboard a manned submersible; collect data and images and bring them back to the classroom for discussion and further learning; and explore the Earth Ocean Analyzer to interact with maps and data visualizations to learn about climate, weather, the coastal zone, plastic pollution, and more.

WORLD OCEAN EXPLORER will use the Internet to bring together an ocean literacy community of users not limited to formal classroom structures, budgets, proximity to ocean aquariums, and other limitations.

EXPLORER has the capacity to expand ocean communications and increase ocean literacy worldwide. We believe that educated and informed citizens can change human behavior on land and sea.

EXPLORER is a free educational gaming experience, available at no cost for use in the classroom and in home school environments by ocean enthusiasts ages 10 and up. Inspired by the Next Gen Science Standards and the Ocean Literacy Curriculum, WORLD OCEAN EXPLORER is an immersive gaming experience designed to excite students about scientific ocean exploration and to promote ocean literacy worldwide.

STRATEGY

Our approach at the World Ocean Observatory is simple: consolidate and expand existing communications initiatives and public engagement innovations to reach a broader global audience. EXPLORER will help us to do just that. With a game capable of reaching a global audience, we can expand interest in ocean issues and habitats, and excite students about the infinite possibilities associated with ocean exploration. We have engaged with a small handful of marine educators who will assist us in beta testing EXPLORER in classrooms next year.

OBJECTIVE

The goal of WORLD OCEAN EXPLORER is free global distribution in both traditional classrooms and home school environments (via Mac or PC) with future expansion to include additional educational modules, virtual reality, and scaled-up public presentation. EXPLORER is designed for ease of use, download, and cost efficiency. The platform utilizes Steam digital distribution, as well as via direct downloads through our website to deliver EXPLORER to classrooms everywhere. Available absolutely free of charge to any educator who wishes to increase ocean literacy and foster interest in ocean systems and health in their classroom, EXPLORER is being developed using Unity, a cross-platform game engine. For use on Windows or Mac platforms.

WORLD OCEAN EXPLORER is designed to excite students about the infinite possibilities associated with ocean exploration. The program is 100% entirely underwritten by foundation and individual support.

MARKET

For early enrollment we intend to ask the following educator groups to download, explore, use, critique and promote EXPLORER:

- The National Marine Educators Association
- European Marine Educators
- The Ocean Literacy Network: Asia, Africa
- Earth Day Schools
- Experiential Education Network (United States)

TEAM

To bring the WORLD OCEAN EXPLORER project forward, we have assembled a team of scientists, software developers, innovators and experienced marine science and creative classroom educators to build and counsel our platform, our curriculum design, and an adherence to principles of Ocean Literacy, classroom effectiveness, and technical competence.

World Ocean Observatory Program Staff

STORYTELLERS

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CLIMATE SCIENTIST AND GAME DEVELOPER

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Katherine Sutton, STEM Education Specialist, Ocean Exploration Trust

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Dr. Craig Strang, Associate Director, Lawrence Hall of Science, UC Berkeley

OCEAN LITERACY CURRICULUM DEVELOPMENT

Zander Majercik, Nvidia

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LEARN MORE

worldoceanobservatory.org/world-ocean-explorer
A new exploratory fly-through video is coming in late July 2020

